

WHAT IS CLAIMED IS:

1. A procedure for the production of a modified acrylic sheet with high impact resistance of the type where at least one acrylate or alkyl methacrylate monomer, one ethylenically unsaturated monomer copolymerizable with the alkyl acrylate or alkyl methacrylate monomer, and a polymer of a dienic monomer are homogeneously mixed, followed by a mass prepolymerization of the components of the previously obtained monomer mix, through the use of a primary initiating agent so as to form a prepolymer, which is later subjected to a curing stage in order to produce sheets, in the presence of a second initiating agent wherein the prepolymerization is made in batches at a temperature of 70 to 95°C approximately, at atmospheric pressure, so as to minimize separation of the dienic monomer polymer from the rest of the mix.
2. The procedure for the production of a modified acrylic sheet with high impact resistance of Claim 1, wherein the mix of monomers includes 70 to 99 parts in weight of alkyl acrylate or alkyl methacrylate; approximately 20 parts in weight of the ethylenically unsaturated monomer, copolymerizable with the alkyl acrylates or alkyl methacrylates; and approximately 1 to 6 parts in weight of the polymer of dienic monomer.
3. The procedure for the production of a modified acrylic sheet with high impact resistance of Claim 2, wherein the polymer of dienic monomer is polybutadiene.
4. The procedure for the production of a modified acrylic sheet with high impact resistance of Claim 3, wherein the polybutadiene is of the type with a high cys content.
5. The procedure for the production of a modified acrylic sheet with high impact resistance of Claim 2, wherein the ethylenically unsaturated monomer is styrene.
6. The procedure for the production of a modified acrylic sheet with high impact resistance of Claim 2, wherein the monomer of the alkyl acrylates or alkyl methacrylate type is methyl methacrylate.
7. The procedure for the production of a modified acrylic sheet with high impact resistance of Claim 1, wherein at the beginning of the mixing stage, a mix of stabilizing agents for ultraviolet light is incorporated, the mix of stabilizing agents including Hals type stabilizers and derivatives of benzotriazole, in order to improve the transparency of the produced sheets, from the polymer.

8. The procedure for the production of a modified acrylic sheet with high impact resistance of Claim 7, wherein the Hals type stabilizing agents for ultraviolet light are selected from bis-(1-Octyloxy-2,2,6,6,tetramethyl-4-piperidine)sebacate; polymero of dimethyl succinate with 4-hidroxy-2,2,6,6,tetramethyl-1-piperidine ethanol; bis(2,2,6,6,-tetramethyl-4-piperidine) sebacate; 1,3,5-triazine-2,4,6-triamino,N,N'''-[1,2- ethanediilbis [[[4,6-bis [butyl(1,2,2,6,6-pentamethyl-4-piperidine)amino]-1,3,5-triazine-2-il]imino] - 3,1 propanediil]] - bis[N',N'' - dibutyl - N',N'' - bis(1,2,2,6,6-pentamethyl-4-piperidine)-; poly- [[6-[(1,1,3,3,-tetramethyl butyl) amino]-s- triazine -2,4- diil][[(2,2,6,6- tetramethyl -4- piperide)imino] hexamethylene [(2,2,6,6,-tetramethyl-4-piperide) imino]]; or, mixes of the same.

9. The procedure for the production of a modified acrylic sheet with high impact resistance of Claim 7, wherein the stabilizing agents for ultraviolet light derived from benzotriazole comprise 2-(2',hydroxy-5-methyl-phenyl) benzotriazole; 2-(2H-benzotriazole-2-il)-4,6-bis(1-methyl-1-phenylethyl)phenol; 2-(5-chloro-2H-benzotriazole-2-il)-6-(1,1-dimethylethyl)-4-methylphenol; 2-(3',5'-di-ter-butyl-2'-hydroxyphenyl)-5-chlorobenzotriazole; and 2-(2H-benzotriazole-2-il)-4,6-bis(1,1-dimethylpropyl)phenol.

10. The procedure for the production of a modified acrylic sheet with high impact resistance of Claim 8, wherein the mix of stabilizing agents for ultraviolet light is added in quantity of approximately 0.2 to 1.5% in weight with respect to the monomer mix.

11. The procedure for the production of a modified acrylic sheet with high impact resistance of Claim 10, wherein the mix of stabilizing agents for ultraviolet light is formed with 2-(2',hydroxy-5-methyl-phenyl)benzotriazole and bis-(2,2,6,6-tetramethyl-4-piperidinile)sebacate.

12. The procedure for the production of a modified acrylic sheet with high impact resistance of Claim 11, wherein the mix of stabilizing agents contains 50% in weight of each one of 2-(2',hydroxy-5-methyl-phenyl)benzotriazole and bis-(2,2,6,6-tetramethyl-4-piperidinile)sebacate, approximately.

13. The procedure for the production of a modified acrylic sheet with high impact resistance of Claim 2, wherein the mix of monomers includes approximately 1 to 6 parts in weight of the polymer of dienic monomer.

14. The procedure for the production of a modified acrylic sheet with high impact resistance of Claim 12, wherein the mix of monomers includes approximately 1 to 6 parts in weight of the polymer of dienic monomer.
15. The procedure for the production of a modified acrylic sheet with high impact resistance of Claim 1, wherein the primary initiating agent is added in quantities of approximately 0.01 to 0.05% in weight with respect to the monomer mix.
16. The procedure for the production of a modified acrylic sheet with high resistance of Claim 15, wherein the primary initiating agent is selected from initiators of the peroxyde and of the azo type.
17. The procedure for the production of a modified acrylic sheet with high impact resistance of Claim 12, wherein the primary initiating agent is selected between tertbutyle peroxydipivalate and azo-bis-isobutyronitrile.
18. The procedure for the production of a modified acrylic sheet with high impact resistance of Claim 1, wherein the prepolymerization is done until reaching a viscosity of the polymer of 18 to 21 seconds in Ford Cup No 6 at the reaction temperature.
19. The procedure for the production of a modified acrylic sheet with high impact resistance of Claim 18, wherein the cold prepolymer has a final viscosity of approximately 45 to 50 seconds in Ford Cup No 6.
20. The procedure for the production of a modified acrylic sheet with high impact resistance of Claim 19, wherein the cold prepolymer has a conversion of 8 to 30% approximately.
21. The procedure for the production of a modified acrylic sheet with high impact resistance of Claim 20, wherein the cold prepolymer has a particle size of the polymer of dienic monomer of 0.1 to 1 microns approximately.
22. The procedure for the production of a modified acrylic sheet with high impact resistance of Claim 21, wherein the cold prepolymer has a molecular weight in approximated number of 100,000 to 1,000,000 daltons.
23. The procedure for the production of a modified acrylic sheet with high impact resistance of Claim 22, wherein the cold prepolymer has polydispersities of approximately 2.0 to 3.5.

24. The procedure for the production of a modified acrylic sheet with high impact resistance of Claim 1, wherein at least one demolding agent is added to the prepolymer and at least one pigment is added before the curing stage.

25. The procedure for the production of a modified acrylic sheet with high impact resistance of Claim 24, wherein the demolding agent is added in quantities of 0.003% to 0.021% in weight with respect to the prepolymer.

26. The procedure for the production of a modified acrylic sheet with high impact resistance of Claim 25, wherein the demolding agent is dioctyl sodium sulfosuccinate.

27. The procedure for the production of a modified acrylic sheet with high impact resistance of Claim 1, wherein the second initiating agent is added in quantities of 0.15% to 2% in weight with respect to the prepolymer.

28. The procedure for the production of a modified acrylic sheet with high impact resistance of Claim 27, wherein the second initiating agent is selected between peroxyde and azo type initiators.

29. The procedure for the production of a modified acrylic sheet with high impact resistance of Claim 28, wherein the curing stage of the prepolymer is done with the procedure of curing in molds.

30. A modified acrylic sheet with high impact resistance produced by mixing approximately 70 to 99 parts in weight of an alkyl acrylate or alkyl methacrylate; up to approximately 20 parts in weight of an ethylenically unsaturated monomer copolymerizable with the alkyl acrylate or alkyl methacrylate; and approximately 1 to 6 parts in weight of a polymer of dienic monomer, wherein, through the curing of a prepolymer produced by a procedure of mass batch prepolymerization, at a temperature of approximately 70 to 95°C and at atmospheric pressure, the sheet has an IZOD impact (ASTM D256) of 1.0 to 1.6 (pound-foot)/inch approximately; a Gardner impact (ASTM 3029) of 40 to 100 pound-inch; and a transmittance of over 88%.

31. The sheet of Claim 30, wherein the polymer of dienic monomer comprises butadiene.

32. The modified acrylic sheet of high impact resistance of Claim 30, wherein the sheet includes 0.2 to 1.5% in weight of a mix of stabilizing agents for Hals type ultraviolet

light and derivatives of benzotriazole, so that the transmittance properties of the sheet are kept after a 1000 hours exposure to Xenon ultraviolet light.

33. The modified acrylic sheet of high impact resistance of Claim 32, wherein the stabilizing agents for the Hals type ultraviolet light comprise bis-(1-Octyloxy-2,2,6,6,tetramethyl-4-piperidine)sebacate; polymer of dimethyl succinate with 4-hidroxy-2,2,6,6,tetramethyl-1-piperidine ethanol; bis(2,2,6,6,-tetramethyl-4-piperidine) sebacate; 1,3,5-triazine-2,4,6-triamino,N,N"-[1,2- ethanediilbis [[[4,6-bis [butyl(1,2,2,6,6-pentamethyl-4-piperidine)amino]-1,3,5-triazine-2-il]imino] - 3,1 propanediil]] - bis[N',N" - dibutyl - N',N" - bis(1,2,2,6,6-pentamethyl-4-piperidine)-; poly-[[6-[(1,1,3,3,-tetramethyl butyl) amino]-s- triazine -2,4- diil][[(2,2,6,6- tetramethyl -4-piperide)imino] hexamethylene [(2,2,6,6,-tetramethyl-4-piperide) imino]].

34. The modified acrylic sheet with high impact resistance of Claim 32, wherein the stabilizing agents for ultraviolet light derived from benzotriazole comprise 2-(2',hydroxy-5-methyl-phenyl) benzotriazole; 2-(2H-benzotriazole-2-il)-4,6-bis(1-methyl-1-phenylethyl)phenol; 2-(5-chloro-2H-benzotriazole-2-il)-6-(1,1-dimethylethyl)-4-methylphenol; 2-(3',5'-di-ter-butyl-2'-hydroxyphenyl)-5-chlorobenzotriazole; 2-(2H-benzotriazole-2-il)-4,6-bis(1,1-dimethylpropyl)phenol.

35. The modified acrylic sheet with high impact resistance of Claim 32, wherein the mix of stabilizing agents for ultraviolet light comprises 2-(2',hydroxy-5-methyl-phenyl)benzotriazole and bis-(2,2,6,6-tetramethyl-4-piperidinile)sebacate.

36. The modified acrylic sheet with high impact resistance of Claim 35, wherein the mix of stabilizing agents includes approximately 50% in weight of each one of 2-(2',hydroxy-5-methyl-phenyl)benzotriazole and bis-(2,2,6,6-tetramethyl-4-piperidinile)sebacate.

37. The modified acrylic sheet with high impact resistance of Claim 32, wherein the transmittance properties of the sheet are reduced by at most 50% after a 1000 hours exposure to Xenon ultraviolet light.

38. The modified acrylic sheet with high impact resistance of Claim 32, wherein the sheet, after being subjected to a heat deformation process, keeps its transparency and impact resistance properties.